

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for allocating a plurality of encryption keys differentiated according to a plurality of access authorization classes, the differentiated encryption keys provided to communicate data with corresponding access points, said the method comprising the steps of:

setting an access authorization to at least one access point in advance; when requesting by a wireless station requests said at least one to an access point to perform initial authentication, differentiating said encryption keys according to a plurality of access authorization types; and

obtaining by at least one the wireless station the differentiated encryption keys in advance when the initial authentication of the wireless station is performed.

2. (Currently Amended) The method of claim 1, wherein the access authorization types include classes comprise:

a class 1 that indicates access authorization to an access point to which the wireless station is assigned,

a class 2 that indicates access authorization to predetermined access points included in a local area network (LAN) to which the wireless station is assigned,

a class 3 that indicates access authorization to all access points included in the LAN to which the wireless station is assigned, and

a class 4 that indicates access authorization to multiple access points included in a wide area network (WAN).

3. (Currently Amended) The method of claim 1, further comprising a step of a the wireless station desiring to communicate with an access point selecting from the plurality of differentiated encryption keys an encryption key corresponding to the access authorization to the access point and communicates data with the access point, wherein the wireless station has a plurality of encryption keys corresponding to access authorization types.

4. (Currently Amended) The method of claim 1, wherein the obtaining of the differentiating differentiated encryption keys step further comprises:

- (a) determining access authorization to an the access point when the access point is requested to perform initial authentication by said the wireless station;
- (b) obtaining an encryption key and generating a shared key set including the obtained encryption keys in accordance with the determination result of step (a);
- (c) determining access authorization to an access point belonging to a LAN by a LAN authentication server which is requested to perform initial authentication by the wireless station;
- (d) obtaining an encryption key and updating the shared key set by adding the encryption key to the shared key set in accordance with the determination result of step (c);
- (e) determining access authorization to an access point belonging to a WAN by a WAN authentication server which is requested to perform initial authentication by the wireless station; and
- (f) obtaining an encryption key and updating the shared key set by adding the encryption key to the shared key set in accordance with the determination result of step (e).

5. (Currently Amended) The method of claim 4, wherein step (a) further comprises ~~a step of~~ the wireless station requesting an the access point to perform authentication, and the access point which is requested to perform authentication determining whether or not access authorization to the access point corresponds to a class 1, said the class 1 indicating access authorization to an the access point to which the wireless station is assigned.

6. (Currently Amended) The method of claim 4, wherein step (c) further comprises ~~the steps of~~:

- (c1) the LAN authentication server determining whether or not ~~the~~ access authorization to the access point corresponds to a class 2, said the class 2 indicating access authorization to predetermined access points included in a LAN to which the wireless station ~~belongs to~~ is assigned;

(c2) if a determination result of step (c1) indicates that the access authorization corresponds to said the class 2, obtaining an encryption key of class 2, and determining whether or not the access authorization corresponds to a class 3, said the class3 indicating access authorization to all access points included in the LAN to which the wireless station belongs to is assigned; and

(c3) if a determination result of step (c2) indicates that the access authorization corresponds to said the class 3, obtaining an encryption key of class 3.

7. (Currently Amended) The method of claim 6, wherein step (c2) further comprises the steps of:

allocating a null encryption key if the determination result of step (c1) indicates that the access authorization does not correspond to said the class 2; and

determining whether the access authorization corresponds to class 3; and

allocating a null encryption key if a the determination result of step (c2) indicates that the access authorization does not correspond to the class 3.

8. (Currently Amended) A roaming method for a wireless station using a plurality of encryption keys allocated differentiated according to a plurality of access authorization classes, the differentiated encryption keys provided to communicate data with corresponding access points, the said method comprising the steps of:

(a) setting an access authorization to an access point in advance, when a wireless station requests said access point to perform initial authentication differentiating said plurality of encryption keys according to a plurality of access authorization types and

said wireless station obtaining by a wireless station in advance an encryption key set including the differentiated plurality of encryption keys for respective the corresponding access points when initial authentication of the wireless station is performed;

(b) receiving a command to communicate with an access point not available for communication using an encryption key currently selected in the encryption key set;

- (c) determining an access authorization to the access point not available for communications;
- (d) selecting an encryption key from the encryption key set obtained in advance corresponding to the determined access authorization; and
- (e) using the selected encryption key to encrypt ~~a transmission message~~ data and communicate with the access point not available for communication.

9. (Currently Amended) The method of claim 8, wherein the access authorization types of the encryption key set includeclasses comprise:

- a class 1 that indicates access authorization to an access point to which the wireless station is assigned,
- a class 2 that indicates access authorization to predetermined access points included in a local area network (LAN) to which the wireless station is assigned,
- a class 3 that indicates access authorization to all access points included in the LAN to which the wireless station is assigned, and
- a class 4 that indicates access authorization to multiple access points included in a wide area network (WAN).

10. (Previously Presented) A computer readable storage medium having embodied thereon a program of instructions executable by a computer for performing the method of claim 4.

11. (Previously Presented) A computer readable storage medium having embodied thereon a program of instructions executable by a computer for the method of claim 8.

12. (Currently Amended) An apparatus for allocating a plurality of encryption keys differentiated according to a plurality of access authorization classes, the differentiated encryption keys provided to communicate data with corresponding access points, the apparatus comprising:

an access authorization determining unit for determining an access authorization class for communication between a wireless station ~~from a plurality of wireless stations~~ and an access point ~~from a plurality of access points~~;

an encryption key storing unit which stores ~~said plurality of~~ the differentiated encryption keys ~~according to said access authorization classes~~; and

an encryption key allocation unit which reads an encryption key from the encryption key storing unit corresponding to a determination result of the access authorization determining unit and transfers a value of ~~said the~~ encryption key to the wireless station.

13. (Currently Amended) The apparatus of claim 12, wherein the access authorization classes include comprise:

a class 1 that indicates access authorization to an access point to which the wireless station is assigned,

a class 2 that indicates access authorization to predetermined access points included in a local area network (LAN) to which the wireless station is assigned,

a class 3 that indicates access authorization to all access points included in the LAN to which the wireless station is assigned, and

a class 4 that indicates access authorization to multiple access points included in a wide area network (WAN).

14. (Currently Amended) A computer readable storage medium storing instructions which, when executed causes execution of a program implementing a structure of a wireless data packet in a wireless network that comprises a wireless station and an access point, the structure comprising:

a header of said data packet transmitted through the wireless network;

an access authorization information storing field, which indicates access authorization for communication between the wireless station and the access point, wherein:

the access authorization information storing field comprises access authorization information being used for allocating encryption keys differentiated according to access authorization classes, and

the differentiated encryption keys are provided to communicate data with corresponding access points;

an encrypted data field in which data contents to be transmitted are encrypted and stored; and

an error correction field, which is used to correct data error.

15. (Previously Presented) The computer readable storage medium of claim 14, wherein the access authorization information storing field comprises two bits and through possible combinations of the two bits, stores

a class 1 that indicates access authorization to an access point to which the wireless station is assigned,

a class 2 that indicates access authorization to predetermined access points included in a local area network (LAN) to which the wireless station is assigned,

a class 3 that indicates access authorization to all access points included in the LAN to which the wireless station is assigned, and

a class 4 that indicates access authorization to multiple access points included in a wide area network (WAN).